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THE UNITED STATES NAVY IN THE YEAR 2030

TECHNOLOGY AND FORCE PLANNING FINDINGS OF THE SURFACE WARFIGHTING 2030 SYMPOSIUM COSPONSORED BY THE NAVAL SURFACE WARFARE CENTER AND THE NAVAL WAR COLLEGE, 13-15 FEBRUARY 1990

BY CAPT ROBERT P. FUSCALDO, USN

COMMANDER, NAVAL SURFACE WARFARE CENTER

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PREFACE

Make bright the arrows
Gather the shields:
Conquest narrows
The peaceful fields

Stock well the quiver
With arrows bright
The bowman feared
Need never fight

Make bright the arrows
0 peaceful and wise
Gather the shields
Against surprise

--Edna St. Vincent Millay

"The bowman feared need never fight..."

The echo of Millay's poetic maxim is ringing louder today than ever.

We are truly witnessing a developing trend leading to perhaps the final chapter of what our generation has called the "Cold War." And when the next generations, our children and their children, come to read about it and ask us what kept the "cold" war from becoming "hot," we can allude to the bowman. We can tell them how we kept our quivers well stocked and our arrows bright with ships and weapons and naval might. We can point to a Navy that shielded us from "harm's way," that kept us at peace.

Of course, they'll be able to fully understand Millay's message because their Navy will still be the world's best. You see, it will be the Navy of the year 2030; the fleet that we're planning today will be the bowman of tomorrow.

This publication summarizes the technology and force planning findings of the *Surface Warfighting 2030 Symposium,* which was held at the Naval War College from 13-15 February, was cosponsored by NAVSWC and the Naval War College, and enjoyed broad community participation.

The basic idea for the conference originated with **Frank C. Mahncke** (D25) in late July 1989. Mr. Mahncke was then the Director of the Surface Warfare Analysis Office. Over the next two months, the objectives of the symposium were defined; co-sponsorship of the symposium was arranged; and the basic design of event was established. **James S. O'Brasky** (D25D), the Senior Scientist of the SWAO, was assigned to serve as the project manager for the symposium. Mr. O'Brasky, a Naval War College graduate and frequent contributor, was responsible for the development and execution of the symposium in cooperation with the staff of the Center for Naval Warfare Studies of the Naval War College. The symposium development effort involved the solicitation of the several papers presented therein, the manning of the symposium, and the creation of a set of highly original symposium support material including analytical geopolitical models and scenarios. Throughout this endeavor, Mr. O'Brasky had the support and assistance of **Betty H. Gay**, former head of the Underwater Systems Department at NAVSWC, who is currently serving

as Science Adviser to the President, Naval War College. As you can see, the relationship between NAVSWC and the Naval War College is of a close, intimate, and long-standing nature.

CAPT Robert P. Fuscaldo, USN
NSWC Commander

The objectives which we set for the Surface Warfighting 2030 Symposium were the following:

- To explore and develop a context and concepts for surface warfighting in the period 2030-2050,
- To identify the central technological challenges/opportunities, and
- To develop a community view.

In addition, I wanted to expose our Surface Warfare Vision project for community consideration and to establish a firm basis for a continuing collaboration with the other members of the material development, planning, and operating communities in its further development.

I can now report to you that the *Surface Warfighting 2030 Symposium* was a triumph which will exert an influence far beyond the event. Excellent papers representing fundamental work were offered by Naval War College, David Taylor Research Center, Surface Warfare Development Group, Naval Space Command, and NAVSWC. The NAVSWC briefers were **Alfred F. Riedl** (N35), Mahncke, O'Brasky, and **Victor A. Meyer** (D25D). The NAVSWC team was led by **Dr. Thomas A. Clare**, NAVSWC Technical Director, and **CAPT Richard W. Moore, USN**, NAVSWC Deputy Commander and OIC, White Oak. The participation of NAVSWC personnel in the working groups was of the highest quality.

The material covered in this symposium was itself of a difficult nature.

In conclusion, let me express my pride and pleasure in the performance of the NAVSWC team who planned and executed the *Surface Warfighting 2030 Symposium* and my appreciation to the members of the 15 other agencies who graced us with their presence and wisdom and, in particular, **RADM George Meinig, USN**, who took time from an extremely busy schedule to participate. Steps are already under way to further a sustained collaborative effort in future endeavors. It was from similar cooperative efforts that a place was found in the present Navy for the aircraft carrier, nuclear submarine, fleet ballistic missile, the CAPTOR mine, and our many uses of space. In this happy time of peace, what better time is there to study the fundamentals of future warfare? The joy of victory in the great unfought war is the sweetest peace dividend of all time.

This material previously appeared in ***On the Surface,*** official publication of the Naval Surface Warfare Center, in the 16 and 30 March 1990 issues.

1

"...AIN'T GONNA STUDY WAR NO MORE"

In the autumn of 1989, former **President Reagan** was asked to describe his place in history. Mr. Reagan replied, "I won the Cold War." At first glance, this reply sounds glib and disingenuous, Upon reflection, it contains a substantial measure of truth. In this winter of I989-90, amid the joyous celebration of democracy and human rights spanning much of the formerly oppressed nations of the globe, we in the industrialized western democracies can really say that "We won World War III by not having to fight it." In this sense, victory is a sweet and heady draught. In our own way, we are a part of this great event and have much to celebrate.

From a defense planning perspective, this winter resembles the winter of 1946. Our enemies are exhausted, their economies are shattered, vast political reform is in the air, and we and our allies can look hopefully toward a world of prosperity and freedom. It is easy to see why so many people, then and now, question the wisdom and utility of maintaining large armed forces when so many long-neglected features of our society desperately need attention. In their view, no credible mortal military threat now exists and lesser forces can cope with lesser threats. *For the moment,* the advocates of this position may be correct.

Our own history teaches us that times and circumstances change and that we as a nation must be prepared to cope with every aspect of change if we are to survive and prosper. Unlike the words from an old song, which appear in the title of this section, now is the time to prepare for change. Now is the time to intensify the study of war.

In the joyous winter of 1946, few people imagined that within two years, the United States would find itself required to counter Soviet initiatives on a global scale, or that within four years we would be straining every military sinew to turn defeat into victory in a major regional war in Korea against a Soviet surrogate.

The development of military capability and forces take time. It currently takes over 20 years to take a ship from concept stage to fleet introduction. It took a decade to expand the fleet from 12 to 14 carrier battle groups.

The geopolitical conditions which call forces into existence are usually shorter lived than the service lives of the forces themselves. A fast battleship designed in 1939 (two years before Pearl Harbor) to bring a Japanese battleline to task found great utility as a carrier task force AAW escort in World War II, as a naval gunfire support platform in the Korean and Vietnam Conflicts, and as a cruise missile platform at the climax of the Cold War.

The underlying assumptions upon which the symposium was based were the following:

- We cannot predict the precise geopolitical futures in which the future fleet

will operate, but we can bound those futures with a set of analytical geopolitical models.

- Any future force design must contain all of the technical capability required to cope with any future world, but the size and balance of the force structure must evolve over time to address the evolving reality.

These assumptions required our people to operate in model worlds in which many of our familiar mindsets were no longer valid.

2

2030: A DIFFERENT WORLD

The decade of the 1890s proved to be one of enormous transition to the U.S. Navy. The U.S. Naval Institute was in its infancy and the Naval War College was barely six years old, when a young sea service philosopher and architect began projecting his view of what the Navy would need to compete for sea power in the future.

Alfred Thayer Mahan envisioned a Navy of steel and steam and evoked a global ocean strategy around his vision. It was a dream that proved fortuitous for the Navy, indeed! Less than a decade after Mahan began expounding his theory of sea power, the U.S. Navy found itself center stage in the Spanish-American War of 1898. It was a Navy which had risen from "12th in the world," (according to an I 881 report critical of sail and timber), to that of battle ships and cruisers which chopped off the sea-legs of Spain and ended forever her status as a colonial power.

So crippling was the loss to Spain of her fleet in the bay of Manila, on that 1 May 1898, at the hands of **Commodore George Dewey, USN,** that it rivaled even the greatest Spanish naval setback --the defeat of the Spanish Armada nearly 300 years earlier. Without question it was a tidal moment for the U.S. Navy; it created waves to rock the boat of American isolationism and raves for Mahan's philosophy of sea power. It also propelled naval strategy of battleship warfare forward another fifty years, until another hallmark date: 7 December 1941.

Now, 100 years since Mahan and the 1890s, the Navy is again wondering what it will look like in the new century. Recently this projection took the form of a meeting, as a cross section of 75 experts in the fields of planning, systems analysis, intelligence, technology and engineering gathered, as the Naval War College and Naval Surface Warfare Center cosponsored the "2030 Symposium." The meeting, held at NWC, featured representatives from all levels of the naval community: (OSD, OPNAV, fleet and system commands, ONR/ONT, R&D Centers, National Laboratories, NTIC/ NOIC, PG School, CNA and Space Command.)

In a nutshell, the symposium was charged with a Mahanian task of looking forward 40 years to the year 2030 and to visualize the Navy's fleet, its policies, its practices and its people.

Why so far into the future? None of the participants in the symposium is likely to be active in the Navy by 2030. Yet the decisions made now and over the next decade in basic research and development will determine the character and capability of the fleet in 2030. Thus, the Center and the War College believe that it is necessary to look now at the future.

The three-day symposium began on a Tuesday with a review by the War College of the range of possible states of the world in 2030--world states in which the Navy would have to support U.S. interests. With the

Soviet Union and eastern Europe undergoing massive changes at a stunning rate, it is impossible to predict the exact political state of the world in forty years. Thus, the War College gave a range of possibilities against which the participants in their workshops could develop the requirements for the surface Navy.

The symposium was set up as a seminar war game. Participants were provided with panels to address five issues of Alternatives World, Maritime Strategy, Surface Warfare System Visions, Technology, and Force Planning. A model was then developed to define possible world status in the year 2030.

Three working groups comprising 20 people each were formed to analyze the five subjects relative to the context of the scenarios. To define the information, the groups were given the same specific objectives and issues to assess. As the groups briefed their findings for each scenario, it became possible to blend into a broad expectation of needs for the 2030 surface force. Also, the group was able to establish priorities and define roadblocks ahead for the five subjects.

The following observations were made:

Alternative World

Clearly, any look at the 2030 world scene would have been different if taken in February 1989, instead of February 1990. Yet, the model to study the world would have remained the same. Since World War II, the focus has been on the ideological behavior in a bipolar world, with the USA and USSR as the major powers. However, this behavior has been significantly influenced by the religious, ethnic, economical and geographic issues in the multipolar world. These conditions are represented by the 2x2 matrix in Figure 1. The key dimensions in this chart are cooperation and competition.

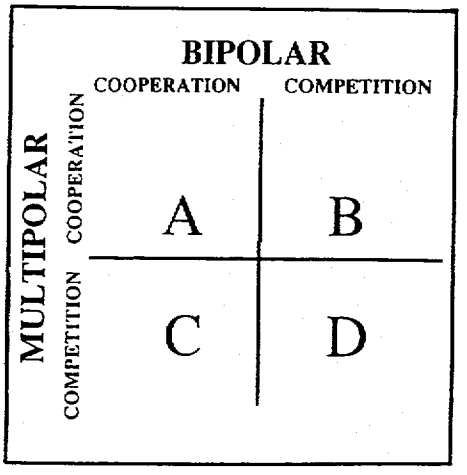

Figure 1. Alternative Worlds

World hopes, of course, are for a cooperative world of condition A. Condition B results in strategic tension much like the 1950s when the United Nations, without significant success, tried to act as a buffer. The result was the Cold War as reflected in condition D. With the crumbling of the Berlin Wall in the autumn of 1989 and a trend toward democracy, disarmament and strategic stability lead to condition C. However, there is still a great deal of tension in the multipolar world, which could easily lead to an increase in third-world conflict. This change in the level of violence is shown in Figure 2. It suggests that 2030 could see both an increase in the number of conflicts and the level of violence.

These conflicts would see our forces involved in a Show of Force, Armed Intervention, and Limited War.

The workshops were given three scenarios to work with: a major power war in Asia in which the U.S. is aiding one of the participants, a regional war in Southwest Asia with naval involvement, and a local conflict in the Eastern Mediterranean. These represented different levels of involvement by the superpowers and thereby gave a range of planning possibilities.

The symposium defined three scenarios to explore conditions C and D of Fig. 1 relative to an impact on a 2030 Surface Force.

Warfare System Vision

Both NAVSWC and DTRC presented similar vision statements for the surface force of 2030. However, NAVSWC's was a top-down look while DTRC's was a bottoms-up assessment.

The DTRC vision makes platform tradeoffs among parameters of signature reduction, combat system performance and passive protection to optimize force survivability.

Figure 3 summarizes the DTRC vision from today's fleet structure to tomorrow's.

The "top-down" approach by NAVSWC examines the 2030 threat, Maritime Strategy and Global context to structure a 2030 Surface Warfare Concept. It contrasts the attrition warfare style where superiority eliminates the enemy to maneuver warfare style which overcomes superiority by attacking weakness.

Out of the approaches, a strategy was developed with the idea of campaign strings that optimize each warfare style to the situation. It utilizes a main force capable of attrition with a screening force capable of scouting and probing. The resulting force requires Carrier and Surface Battle Group combatants, but adds the concept of sea control and scout ships.

In summary, both NAVSWC and DTRC visions result in the same type of 2030 force structure.

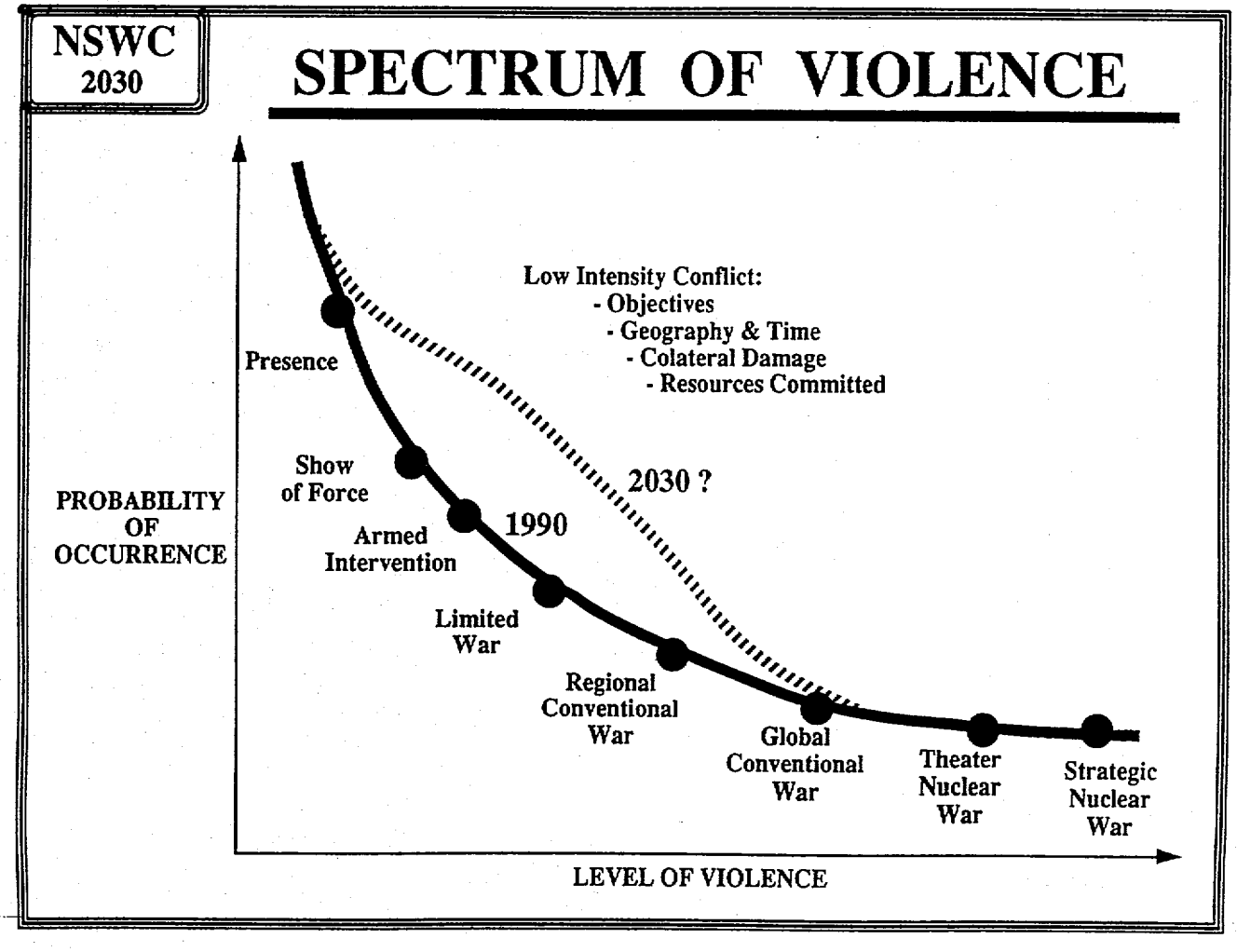

Figure 2. Probability of Various Levels of Violence

3

SURFACE FLEET VISIONS FOR THE YEAR 2030

Any vision of the Surface Fleet in the year 2030 would have to mirror a mission image of what ADM Alfred T. Mahan, USN, saw one century ago for his future Navy. It would still have to command and control communication in the sea lanes.

Mahan had a seedbed background of fertile soil for his strategic seed to take root and break ground. He was born in 1840 at West Point, N.Y., where his father was a professor at the United States Military Academy. One of Professor Mahan 's bosses at West Point was somewhat of a teacher too, and would later come to be known as "The Gray Fox" to his adversaries because of the costly strategic lessons he taught. He was Academy Superintendent **Robert E. Lee.**

But Lee wasn't the only genius that crossed paths with Mahan 's career. Indeed, when the War Between the States broke out and Mahan was fresh from Columbia and the United States Naval Academy, he found himself serving as a lieutenant in the Union Navy's South Atlantic Blockading Squadron. The skipper of the squadron was **RADM John A. Dahlgren, USN.**

Thus, the historic irony between the Naval War College of Mahan's era, and the Naval War College of the 2030 Symposium and NAVSWC, comes to focus.

And,just as Mahan saw a Navy of steel and steam replacing one of timber and sail, the 2030 Symposium sees some remarkable changes ahead. The symposium participants envisioned the future fleet transitioning as in Figure 3 to be: 1. Very mobile, 2. Having a low observable silhouette, 3. Indiscriminate, and 4. Distributed.

Technology

So how will the technological aspects for the Navy of 2030 look?

Four briefs were presented in the Technology Seminar of the 2030 Symposium:

(1) Space Command addressed the needs and technology for our space assets.

(2) DTRC discussed advanced ship technology needs around a notion of clustering, then setting priorities relative to ship payoff so that technology is present when platform construction begins.

(3) NAVSWC offered a look at the technology required to meet the new paradigm for combat systems. It integrates horizontal sense for each warfare area over sensors, control and engagement, and in a vertical sense for ship control, warfare areas and force command. Vertical sense, however, requires creative information control. As in the DTRC cluster concept, NAVSWC stated the need to synthesize technology to achieve the needed improvement in sense,

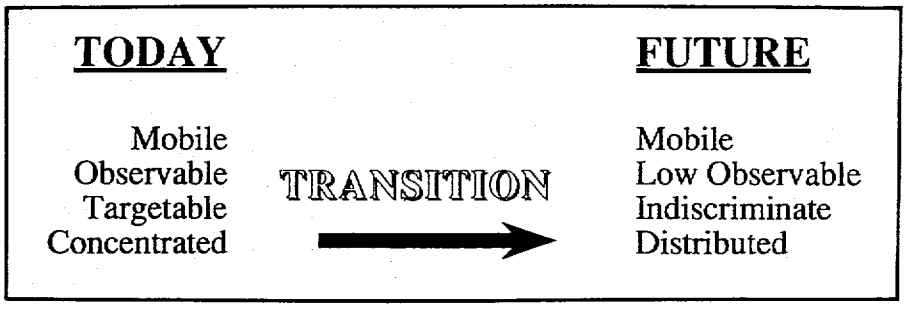

Figure 3. A Navy in Transition

control, engage and information management.

(4) The final brief, given by SWDG, showed need to include tactical development in partnership with technology. Tactics are the bridge between changing threats and new weapons systems, SWDG said.

Force planning

Three papers were given on the final issue of the 2030 Symposium--Force Planning.

NAVSWC described the impact of Small Wars on Force Structure and provided a historical perspective on the Warfare Theory of Corbett, Mahan, etc. NWC then set the stage for the final working group session by examining the needs of War at Sea, War Against the Land, and War in the Third World. These papers conceptualize a mobile force capable of fighting in all three cases and an area force valuable for presence and small wars. Such concepts were studied to compare the forces in the 2030 vision and to begin a prioritization to be able to come to an affordable force for 2030, which meets the possible conditions defined.

Case Study

A case study can be prepared for each of the scenarios; but for this article, a scenario that matches a world in the condition of strategic stability was selected. It is interesting to note that this very condition addresses the world of today. And, while current optimism propels hope for a world entirely at peace of tomorrow, it is more probable that the strategically stable world of today will remain on future horizons given the growth of regional hegemonies.

Maritime Strategy

The group was faced with defining a set of objectives which were valid for global policy and also dealt with the regional issues of strategic stability. Three general and three specific objectives were postulated. The trio of general objectives are:

- Ensure continued free access to resources and lines of communication.
- Deter regional conflict.
- Maintain the status quo of strategic stability.

Specific objectives listed were:

- Achieve regional containment.
- Facilitate disengagement.
- Prevent escalation of strategic stability; discourage condition from becoming that which possesses weapons of mass destruction.

To meet these six general and specific goals the group defined new strategy. It was concluded that regional conflicts associated with a world in a state of strategic stability would be in vital need of the basic missions of sea power. Those missions--presence, sea control and power projection--encompass the doctrine of "minimal force" while maintaining U.S. interests.

Succinctly, the strategy of presence includes:

- Deploy couple forces forward.
- Rapidly deploy additional forces to contain conflicts (the scenario recognizes affordability issues and lack of bases).

The strategy of sea control includes:

- Protect lines of communication.
- Frustrate the offensive efforts of participants.
- Maintain presence to facilitate disengagement.

These strategic elements recognized that area forces have the ability to scout, probe and use clever concepts to turn back sea forces of the regional powers. Surveillance and information management would likely be critical in this scenario. And, in a strategically stable world, it is conceivable that information would be open and free flowing. However, control of space and regional information could be a powerful leverage. It is also reasonable to assume that both parties in a conflict are allies (e.g., Falklands War) and our goal is to protect vital interests.

The strategic dynamics of power projection included destruction of the capability for participants to wage war. It is a last priority, but essential to meet objectives. It is reasonable to assume that the regional powers possess weapons of mass destruction so our forces must be able to withstand certain weapons systems. Thus, a very mobile force is needed in this strategy.

Visions

The force of the future would need to be distributed, quiet and cooperative. This is not currently a compatible set, so the technology and tactics for the vision must achieve the ability to be cooperative in a deployed (distributive), quiet force. The tradeoffs of tactics, technology and affordability must be considered when achieving the desired characteristics of the force. The group believed the following are important to meet the threat of a world in the condition of strategic stability:

- Vision must allow both mobile and area forces.
- We must be able to operate both forces in hostile environments.
- We must be adaptable to a changing world.
- Knowledge of region must be available.
- Joint and combined capabilities will be required (sailing along with former adversaries, e.g., a joint US-USSR naval force).

Technology

The group found that the force must have advanced technology. Because regional information will be so necessary and will also be so complicated due to the conditions in the regions affected, high priority was placed on information management, automation and sensor processing.

Also, the force will be in a unique role of being referee between mutual friends. Thus, a ship must be able to have its "nose bloodied" and still be a fighting force. This requires hardening, signature management and robust point defense. Finally, our space assets must remain robust over the area and in all probability we will want the ability to collect information by autonomous vehicles before commitment of force.

Sea Power

A key role for sea power is played in peace. An area force flexible enough to provide a strong military presence and, at the same time, carry out current roles such as drug interdiction, oil spill cleanup, medical aid for third world countries, etc, is essential.

The visions for both sea control and mother-scout ships are powerful and exciting for the future. The force must be used also to collect regional information needed

for waging war--charts, weather, oceanography, etc. The area force must also be ready to support itself relative to repairs and logistics. It is probable that the mobile force won't be present as the conflict starts to evolve; therefore an area force must be ready to fight amid such unconventional waters as terrorism, mines, chemicals and land-to-sea weaponry. A robust protection system is a vital necessity.

Case Study Summary

The group supported concepts of the visions for 2030 when used as a complementary set. The group concluded a surface force is necessary for 2030, but it must be conceived about a creative new paradigm developed from the presented visions.

The round table participants expressed positive views about the 2030 Symposium. Their findings:

- We need to define and develop tomorrow's technology today.
- We must purchase a new surface Navy.
- The new force must be survivable.
- It is desirable to prototype ships.
- Patience and flexibility will be needed to handle future uncertainty.

Such conclusions were remarkably similar to those made by Mahan a century before the 2030 Symposium. For as he saw his philosophy of sea power develop, he saw the need for a modern Navy to ensure its strategy.

Undoubtably, he also saw that parapeaceful strategic stability is maintained only by a strong Navy.

Painfully, history reminds us that that image is the only image that can maintain peace. So, I am hopeful that our Navy in the year 2030 will still be that "feared bowman." Because Americans then need to examine the history of their Navy for a century. They need a glimpse of what their Navy looked like in the year 1930, when its quiver of arrows was being reduced. They need to be reminded of an event that occurred just 11 years after 1930--7 December 1941--to realize what happens when the bowman is not feared!